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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,324	03/06/2002	Shunichi Abe	50083-216	7149

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EXAMINER	
NGUYEN, KHIEM D	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/091,324	ABE ET AL.	
	Examiner	Art Unit	
	Khiem D Nguyen	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2004* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

Response to Arguments

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

New Grounds of Rejection

Drawings

The corrected or substitute drawings were received on January 05, 2004. These drawings are accepted by the examiner.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 9. It is unclear a member covering a surface layer region of what "section" is being removed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. (U.S. Patent 5,970,322) in view of Yamauchi (U.S. Patent 5,413,471).

In re claim 1, **Ichikawa** discloses a method of manufacturing the semiconductor device comprising (**FIGS. 1(a)-(e)** and related text): arranging at least a part of a portion of a lead frame **(FIGS. 1(a)-(e): 1)** that is to be sealed with a resin **(FIGS. 1(c)-(e): 9 and 16)**, and a portion for use as an outer lead **(FIG. 1(e): 1c)**, respectively, in a cavity **(FIG. 1(c): 7)** of a mold **(FIG. 1(c): 5 and 6)**; filling a sealing resin **(FIGS. 1 (c)-(e): 9 and 16)** into the cavity of the mold, and hardening the sealing resin (col. 4, lines 11-33); removing the lead frame sealed with the resin from the mold (col. 4, lines 47-49 and **FIG. 1(e)**); and removing a member covering a surface layer region of the section, and removing sealing resin over the member, for use as the outer lead, of the lead frame (col. 4, lines 34-64).

Ichikawa does not explicitly disclose wherein the mold is a metal mold as recited in claim 1.

Yamauchi discloses a method of manufacturing the semiconductor device comprising: arranging at least a part of a portion of a lead frame **(FIG. 1: 1)** that is to be sealed with a resin in a cavity **(FIG. 1: 5)** of a metal mold **(FIG. 1: 3 and 4)** (col. 8, line 7 to col. 9, line 14). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Ichikawa and Yamauchi to enable the metal mold of Ichikawa to be formed and furthermore to equalize resin injection pressures (col. 6, lines 60-65).

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. (U.S. Patent 5,970,322) in view of Yamauchi (U.S. Patent 5,413,471) as applied to claim 1 above, and further in view of Utsumi et al. (U.S. Patent 6,603,194).

In re claim 2, **Utsumi** discloses wherein a plurality of semiconductor device constituent sections **(FIG. 5A: 14)** are arranged in a common cavity of the metal mold on the lead frame. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Ichikawa, Yamauchi, and Utsumi to enable a plurality of semiconductor device constituent sections of Ichikawa to be formed and furthermore to improve the quality of a resin-encapsulated semiconductor device while prolonging the life of a cutting blade, thus improving the productivity (col. 1, lines 60-65).

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. (U.S. Patent 5,970,322) in view of Yamauchi (U.S. Patent 5,413,471).

In re claim 1, **Ichikawa** discloses a method of manufacturing the semiconductor device comprising (**FIGS. 1(a)-(e)** and related text): fixedly attaching removable members to both sides of a section **(FIGS. 1(a)-(e): 1)**, for use as an outer lead **(FIG. 1(e): 1c)** of a lead frame, arranging a section, to be sealed with a resin, of the lead frame including the removable members in a cavity **(FIG. 1(c): 7)** of a mold **(FIG. 1(c): 5 and 6)**; filling a sealing resin **(FIGS. 1 (c)-(e): 9 and 16)** into the cavity of the mold, and hardening the sealing resin (col. 4, lines 11-33); removing the lead frame sealed with the resin from the mold; forming a groove ranging from a surface of the sealing resin to edges of the removable members (col. 4, lines 47-49 and **FIG. 1(e)**); and removing a

member covering the section for use as the outer lead, with the portion of sealing resin over the member in which the groove is formed set as a boundary (col. 4, lines 34-64).

Ichikawa does not explicitly disclose wherein the mold is a metal mold as recited in claim 3.

Yamauchi discloses a method of manufacturing the semiconductor device comprising: arranging at least a part of a portion of a lead frame **(FIG. 1: 1)** that is to be sealed with a resin in a cavity **(FIG. 1: 5)** of a metal mold **(FIG. 1: 3 and 4)** (col. 8, line 7 to col. 9, line 14). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Ichikawa and Yamauchi to enable the metal mold of Ichikawa to be formed and furthermore to equalize resin injection pressures (col. 6, lines 60-65).

4. Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichikawa et al. (U.S. Patent 5,970,322) in view of Yamauchi (U.S. Patent 5,413,471) as applied to claim 3 above, and further in view of Utsumi et al. (U.S. Patent 6,603,194) and the applicant's admitted prior art (AAPA) of this application.

In re claims 4-8, **AAPA** discloses wherein spacers **(FIG. 16C: 6)** detachable from the section to become the outer lead are employed as the removable members (Background of the Invention, pages 1-3 and **FIGS. 16A-D**). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Ichikawa, Yamauchi, Utsumi, and AAPA to enable the spacers of Ichikawa to be formed and furthermore to obtain the outer leads.

In re claim 9, **Utsumi** discloses wherein a plurality of semiconductor device constituent sections **(FIG. 5A, 14)** are arranged in a common cavity of the metal mold on the lead frame. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teaching of Ichikawa, Yamauchi, and Utsumi to enable a plurality of semiconductor device constituent sections of Ichikawa to be formed and furthermore to improve the quality of a resin-encapsulated semiconductor device while prolonging the life of a cutting blade, thus improving the productivity (col. 1, lines 60-65).

Response to Amendment

Response to Arguments

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

In response to Applicants' arguments that not only is the member covering the surface layer region removed, but the sealing resin over the member is also removed as recited in the currently amended independent claims, examiner respectfully disagree. Applicants are directed to (col. 3, line 41 to col. 4, line 59 and FIGS. 1(c) and 1(e)) where Ichikawa discloses removing the sealing resin (FIG. 1(c): 3) over the member, for use as to become the outer lead (FIG. 1(e): 1c), of a lead frame (FIG. 1(e): 1). Since it is unclear a member covering a surface layer region of what "section" is being removed as mentioned under 35 U.S.C. 112, second paragraph, above. It is undetermined which portion of the sealing resin is being removed. For these reasons, examiner holds the rejection proper.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone numbers

for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.
March 19, 2004

W. DAVID COLEMAN
PRIMARY EXAMINER